APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,115	01/03/2002	Hideo Asano	ARC920010055US1	8776

			EXAMINER
33360	7590	09/28/2004	FIGUEROA, NATALIA

MARK D. MCSWAIN
IBM ALMADEN RESEARCH CENTER, IP LAW DEPT.
650 HARRY ROAD
CHTA/J2B
SAN JOSE, CA 95120

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>04 April 2004</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-9</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>8</u> is/are allowed.

6)☒ Claim(s) <u>1-2, 4-5, 9</u> is/are rejected.

7)☒ Claim(s) <u>3, 6-7</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Tetsuya (EPO 0481752 A1) in view of Takashi et al (USPN 6,519,715).

Regarding claim 1: Tetsuya discloses a method for encoding and decoding blocks having a

predetermined number of sectors of data bytes to detect and correct data bytes in error in each

sector of a block, the method comprising the step of:

(a) generating sector level check bytes for each sector in the block responsive to the data

bytes in each sector according to a first level of an error correction code, and generating block

level check bytes for at least one sector in the block responsive to the sector level check bytes of

at least two sectors, including the at least one sector, according to at least a second level of the

error correction code (abstract and fig. 5 and disclosure thereof).

Tetsuya fails to explicitly teach the step of (b) processing the block to detect and correct

data bytes in error in each sector within the capability of the sector level check bytes, to detect

and correct data bytes in error in the at least two sectors that exceed the correction capability of

the sector level check bytes but within the correction capability of the block level check bytes, or

to indicate that the data bytes in error in the at least two sectors exceed the correction capability

of each of the sector level check bytes and the block level check bytes. However, Takashi et al

disclose such on (col. 13, lines 38-57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to modify the apparatus as disclosed by Tetsuya with the above

teachings from Takashi et al to include capability means to correct errors, hence selecting the

right capability to correct errors and maximizing data storage.

Regarding claim 5: Tetsuya further discloses that the blocks represent audio and visual

information (col. 1. lines 24-25).

Regarding claim 9: Apparatus claim 9 is drawn to the apparatus corresponding to the

method of using same as claimed in claim 1. Therefore apparatus claim 9 corresponds to method

claim 1, and is rejected for the same reasons of obviousness as used above.

3.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tetsuya

and Takashi et al as applied to claim 1 above, and further in view of Lee (USPN 6,405,342).

Regarding claim 2: Tetsuya and Takashi et al are relied upon for the same reasons as stated

in the above rejections. Tetsuya and Takashi et al fail to explicitly teach the method further

re-generating the block level check bytes for the at least one sector responsive to the data bytes

in error detected in each sector. However, Lee discloses such on (col. 14, lines 46-63).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the apparatus as disclosed by Tetsuya and Takashi et al with the

above teachings from Lee to include the regeneration of bytes, hence correcting errors and

maximizing the data storage.

4.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tetsuya

and Takashi et al as applied to claim 1 above, and further in view of Ofer et al (USPN

5,719,885).

Regarding claim 4: Tetsuya and Takashi et al fail to explicitly teach that each sector has

512 data bytes and each block has eight sectors. However, Ofer et al disclose such on (col. 2,

lines 1-10). Therefore, it would have been obvious to one having ordinary skill in the art at the

time the invention was made to modify the apparatus as disclosed by Tetsuya and Takashi et al

with the above teachings from Ofer et al to choose data storage parameters that are common in

the art, hence making the system compatible to other systems.

Allowable Subject Matter

5.   Claims 3, 6 and 7 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

6.   Claim 8 is allowable.

7.   The following is an examiner's statement of reasons for allowance:

The prior art of record, and in particular Tetsuya (EPO 0481752 A1), fails to teach or

suggest a method comprising (a) receiving logical block addresses (LBAs) from a host operating

system for each write command and each read command, wherein the LBAs are translated into

physical assignment of each sector to corresponding blocks on tracks on a moving storage

medium of a data storage device, wherein an integral multiple of blocks are written on each

track; (b) writing data bytes to the moving storage medium responsive to the LBAs, wherein the

step of writing further comprises the step of (b1) generating sector level check bytes for each sector

in the block responsive to the data bytes in each sector according to a first level of an error

correction code, and generating block level check bytes for at least one sector in the block

responsive to the sector level check bytes of at least two sectors, including the at least one sector,

according to at least a second level of the error correction code; (c) reading data bytes from the

moving storage medium responsive to the LBAs, wherein the step of reading further comprises

the step of (c1) processing the block to detect and correct data bytes in error in each sector within

the capability of the sector level check bytes, to detect and correct data bytes in error in the at

least two sectors that exceed the correction capability of the sector level check bytes but within

the correction capability of the block level check bytes, or to indicate that the data bytes in error

in the at least two sectors exceed the correction capability of each of the sector level check bytes

and the block level check bytes.

Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

Response to Arguments

8.   Applicant's arguments filed on 04 April 2004 (Paper No. 5) have been fully

considered but they are not persuasive.

Regarding claims 1 and 9, the applicant argues that "the prior art fails to teach or suggest

the invention's ML-ISF-ECC binary tree check byte generation scheme", the examiner

respectfully disagrees because that which is claimed in claims 1 and 9 are disclosed in the

references as applied in the above rejections. Please refer to Tetsuya (EPO 0481752 A1) in combination with Takashi et al (USPN 6,519,715).

Regarding claims 1 and 9, the applicant argues, "That is, the summation of the check bytes of the multiply encoded data strings makes the encoder practical, ...", the examiner respectfully disagrees because the arguments does not represent that which is claimed in claims 1 and 9.

Regarding claim 2, the applicant argues that "the present invention seeks to minimize or avoid a retry or data recovery procedure altogether", the examiner respectfully disagrees because the arguments does not represent that which is claimed in claim 2.

Regarding claim 7, applicant's arguments, with respect to valid prior art reference has been fully considered and is persuasive. The rejection under 35 USC 103 of claim 7 has been withdrawn.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Natalia Figueroa whose telephone number is (703) 305-1260.

The examiner can normally be reached on Monday - Thursday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Sinh N. Tran can be reached on (703) 305-4040. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NFM

SINH TRAN
PRIMARY EXAMINER